

ACEC Gettysburg Blow Out 2026

Matthew R. Burd, P.E.



September 15, 2026



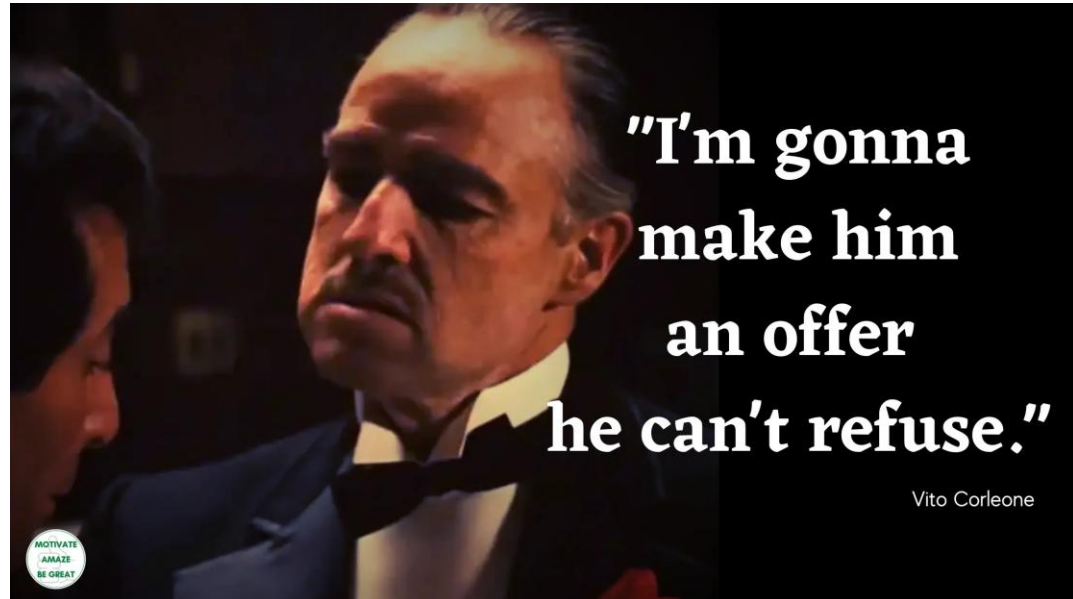
Lump Sum Items

- Should be a last resort
- If quantities are known, pay individual items
 - Allows for easier renegotiation and addressing any extra work
- For Information Only – Still usable in a claim

“They’ll Figure it out in construction”

- Uncertainty cost money, unknowns will be bid high to cover the contractor

Once the Contract is Signed, We are Partners
The most likely deal is one in which nobody is really happy



Construction Staff is Trying to Help

To be fair, this sort of came on while I was still in design!



Allegheny Tunnel Fire

June 4th around 830 pm

Truck caught fire
midway

Pavement repairs were
needed

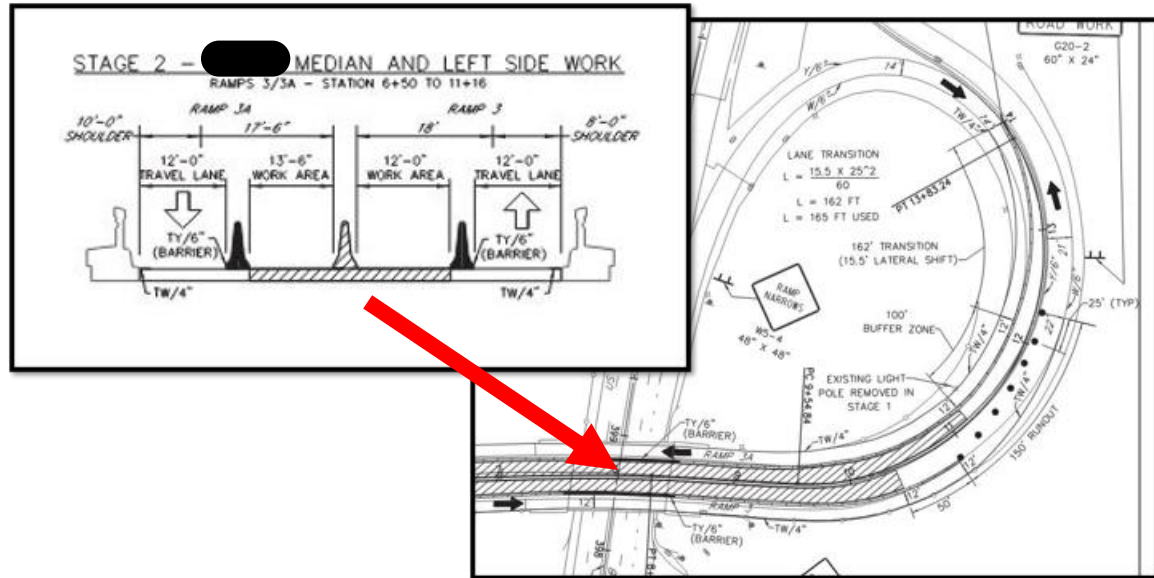
Fans used during
operations

Yes, I know it isn't a
construction project



Interchange MPT

- Operation was latex overlay of the left lanes and median
- Created very tight travel lanes



Interchange MPT

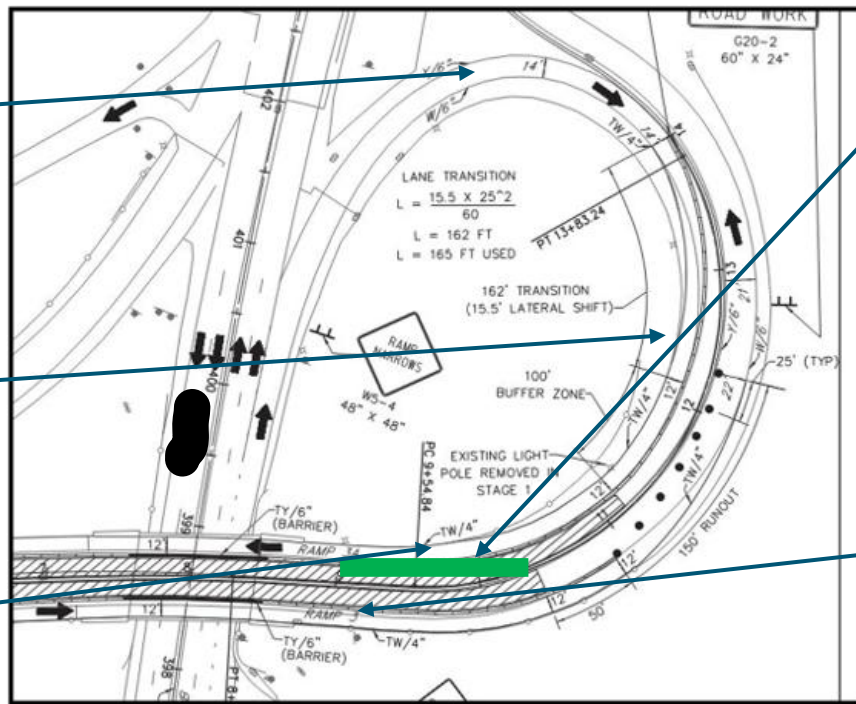


Interchange MPT

14' Width tapers down to 12' width around tight radius

Shoulder and light pole base heavily deteriorated inside the turn radius

Pinch Point where truck was stuck



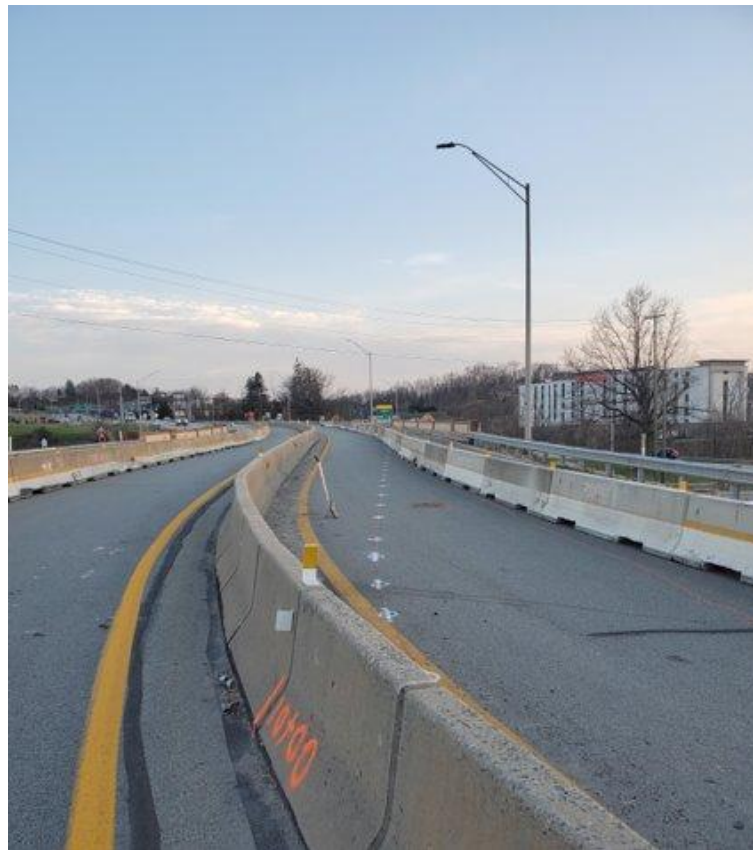
New Ramp 3A Barrier tied in to existing barrier at Sta. 10+30.

Ramp 3 Barrier removed between Sta. 9+70 to 11+00 adjusted to improve turn radius for trucks

Interchange MPT

Lessons Learned

1. Temporary shoulder extension prior to temporary concrete barrier placement
2. Walk the Layout – Make Sure it Makes Sense
3. If the template barely works, it doesn't



Mon Fayette Caissons

- 4 - Caissons
- 18' – 5'-6" Shaft
- 37' – 5'-0" Rock Socket



[illegible]

Mon Fayette Caissons



REMOVE AND REPLACE

Mon Fayette Caissons

PLAN A – Pressure Grout –
No – Cannot verify that 100%
of voids are grouted.

PLAN B – Add Fifth Drilled
Shaft – No – Transverse
moment loading issue for tall
pier.

PLAN C – Construct Two
Smaller Diameter Shafts
Through Center of Shaft 1
and Shaft 2 – Mmmm.



JAKE-CLARK.TUMBLR

Mon Fayette Caissons

Good Example of Partnering with Contractor:

- PTC entertained alternatives other than remove and replace.
- Expedited reviews and held multiple big group meetings.
- Trumbull Corporation never asked for cost reimbursement or challenged responsibility.
- Trumbull Corporation added an impact activity to CPM Schedule, but no activities in the schedule updates ever showed negative float due to this issue.

Good Example of Collaboration with Design:

- Expedited corrective action proposal reviews.
- Keep an open mind and communicated.
- Met multiple times with construction team.
- Ensured the PTC was still getting a quality product.

Pin and Loop Barrier



Pin and Loop Barrier

- Standard Pin and Loop Barrier Minimum Length is 12'-0". Opening Length After Removing End Transitions was 89'-0"
- Connecting Pin and Loop Barrier To Existing Slotted Barrier
- Bottom Reveal Section Is Now 7" High With A Minimum 4" Embedment Depth.
- Pin and Loop Barrier Cannot be "Dropped In Place" Like Slotted Barrier



Pin and Loop Barrier

- Placed 7 Pieces of 12' Barrier and 1 Piece of 5' Barrier that PTC MTC Had Stockpiled



Pin and Loop Barrier



Pin and Loop Barrier

- PROBLEM - Connecting Pin and Loop Barrier To Existing Slotted Barrier
- SOLUTION - Contractor Fabricated 2 Pieces of 12' Median Barrier That Were Slotted On One End and Pin and Loop On the Other End

- PROBLEM - Bottom Reveal Section Is Now 7" High With A Minimum 4" Embedment Depth.
- SOLUTION - Contractor Excavated The Full Depth Of The Concrete Roadway And Brought Subbase Back Up To Required Height To Match Existing Barrier Height. Final Embedment Ended Up More Than 4"

Pin and Loop Barrier

- PROBLEM - Pin and Loop Barrier Cannot be “Dropped In Place” Like Slotted Barrier
- SOLUTION - Contractor Excavated The Concrete Roadway An Extra 6” On Each Side Of Median Barrier Width To Give Room For The Barrier To Be Connected Then Dropped Into The Slot



Pin and Loop Barrier – Lessons Learned

- Review plans prior to construction to make sure that 12' lengths will work. If not, pieces may need to be cast-in-place.
- Review bid items and specs to make sure potential additional costs are included like; over-excavation of barrier placement area, special transition pieces between slot type and pin and loop type barriers, and paving additional width beside the barrier.
- Review the radius of the barrier placement. A radius less than 450' MUST be cast in place.

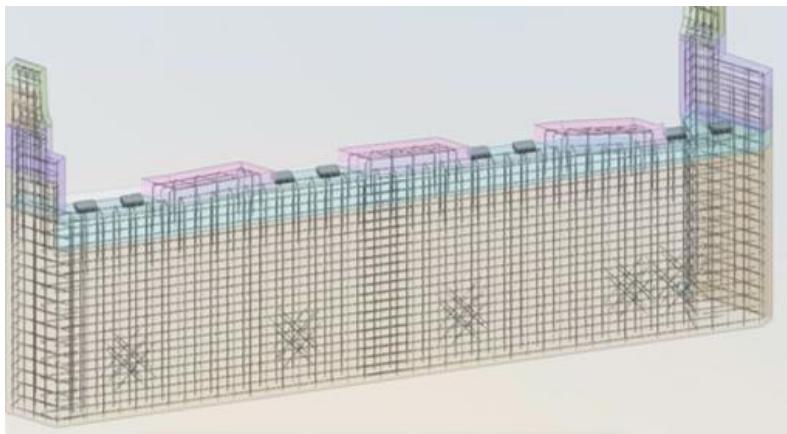
Digital Delivery Projects

- A83 Overhead Bridge Replacement
 - Existing: Single-Span Steel Bridge
 - Replacement: Two-Span Prestressed Spread Box Beam Bridge
 - Autodesk Civil 3D
- T238 Access Ramps
 - Constructing new Access Ramps EB & WB at MP 238
 - Earthwork, Roadway, Drainage, & Basin items
 - Bentley Synchro
 - The Team:
 - PTC
 - Michael Baker
 - Gibson-Thomas
 - NESL

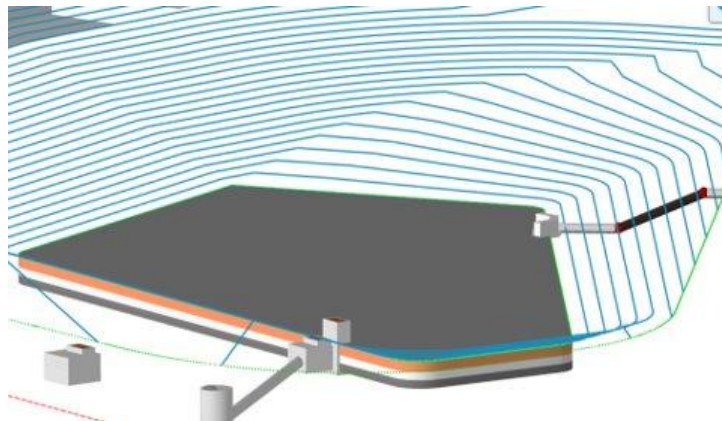


Digital Delivery Projects

- A83 Overhead Bridge Replacement
 - Design Handoff
 - Model Handoff from Symetri/Rettew
 - Training for PTC & CM/CI Staff (AECOM)

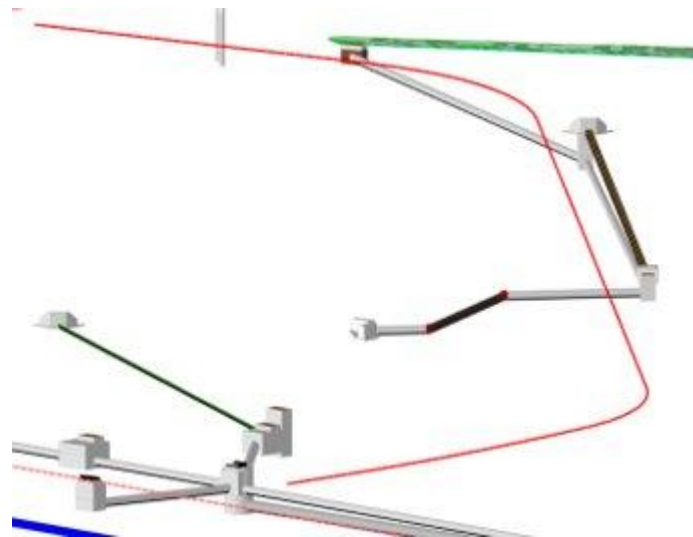


- T238 Access Ramps
 - Design Handoff
 - Model Handoff from Bently/GT
 - Training for PTC, CM/CI Staff (CDR)



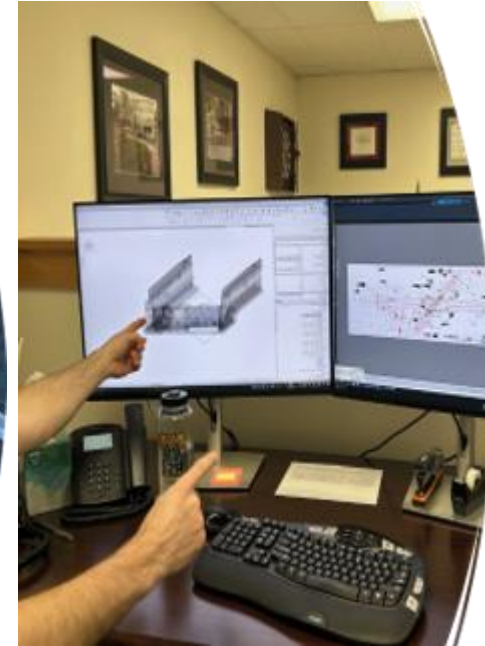
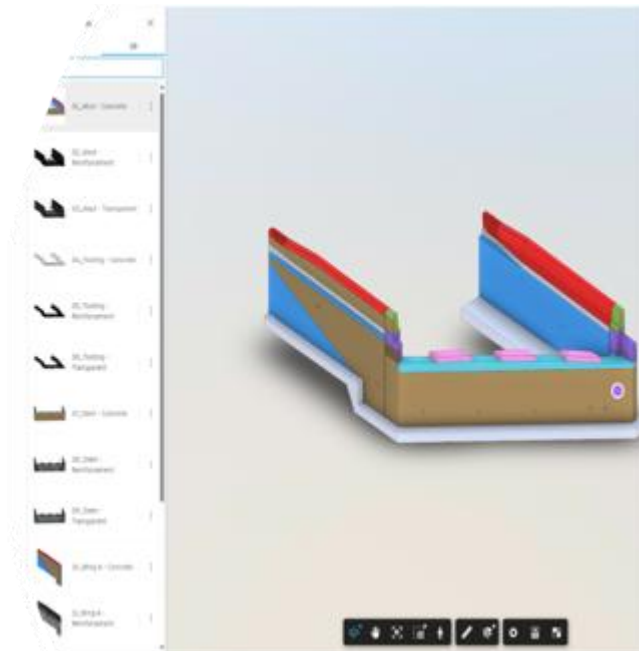
Digital Delivery Projects

- For Both Projects
 - Model Training for Road-Con (Prime) & NESL
 - Bi-Weekly Model meetings
 - 4 months on A83, Start to Completion on T238
 - Partnering, Model Q&A, Potential RFIs, Design Involvement



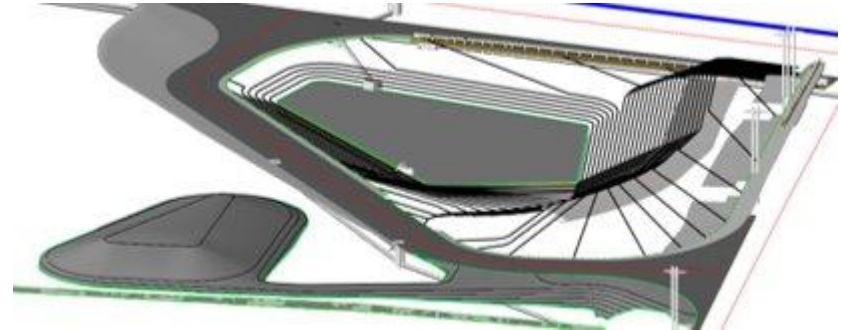
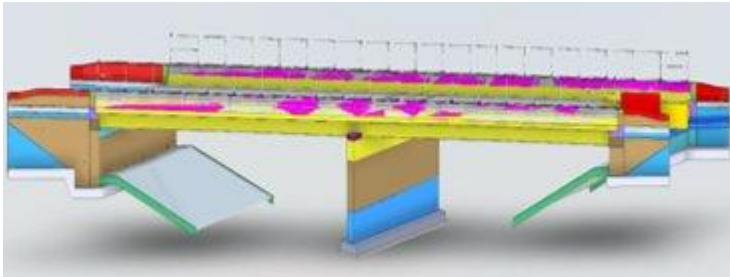
Digital Delivery Projects

- Contractor & CM/CI use of the model



Digital Delivery Projects

- Model versus Reality

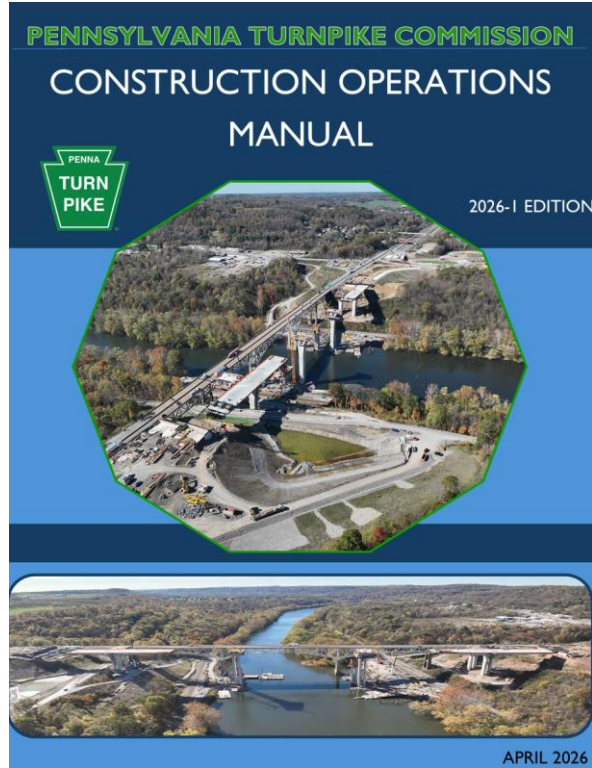


Digital Delivery Projects

- A83 Overhead Bridge Replacement
 - What Worked Well:
 - Rebar Depiction
 - Summary of Quantities
 - Designer's Intent
 - Areas for Improvement:
 - Training
 - Field Drawings
 - In Field Model Liaison for CM/CI Staff

- T238 Access Ramps
 - What Worked Well:
 - Summary of Quantities (Earthwork & Drainage)
 - Visual of the final product
 - Cross-sections
 - Areas for Improvement:
 - No E&S Features
 - Contractor's needs on the mobile App
 - Missing Elements (Center Line)





**Review Current
Activities**

**Review
Industry
Innovations**

Key Recommendations and Findings

**Streamline, automate, eliminate,
and innovate construction
inspection activities**

Input from Field Staff



Key Recommendations

1

Improving
Processes

2

Enhancing
Systems
and Tools

3

Embracing
Innovation

4

Sustaining
a Skilled
Workforce

Improving Processes

NEAR-TERM

Less than one year

MID-TERM

One to three years

Cultivate a Culture of Innovation, Efficiency, and Empowerment (ONGOING)

COM Re-Write and Updates

QA Program Assessment

Location ID Evaluation

COM User-Friendly Format

QA Program Assessment Implementation

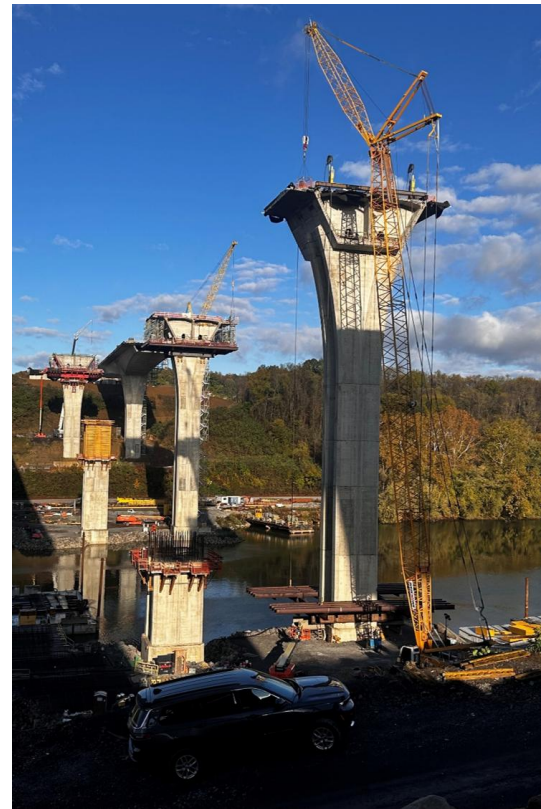
Improving Processes

Eliminated Two Forms to Date

Reduced MPT Checks when not active

Replaced General Safety Checklist w/ Quarterly
Safety Inspections

COM Rewrite and Reformat



Enhancing Systems and Tools

NEAR-TERM
Less than one year

Software and Hardware Evaluation

MID-TERM
One to three years

Software and Hardware Migration

Tools for Inspectors

Embracing Innovation

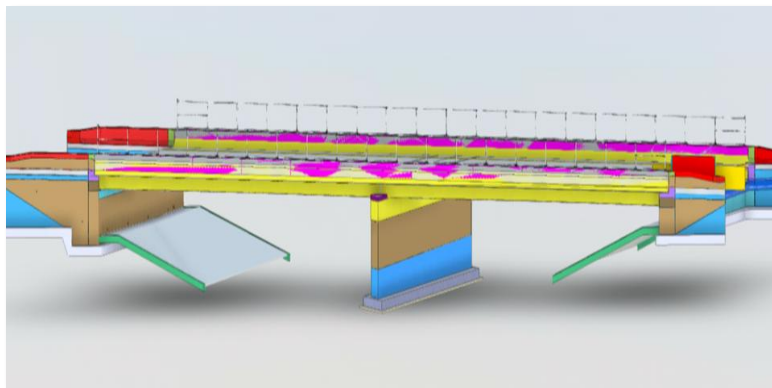
NEAR-TERM
Less than one year

MID-TERM
One to three years

Digital Delivery and 3D Modeling

AI Readiness

Alternative Procurement and Contracting Methods



Embracing Innovation

Potential AI Use Cases

- Revising Manuals and/or Forms
- Reviewing Plans and Specs
- Search tool for project specific plans
- Analyzing contractor documentation
- Developing prompts to support IDR's
- Analyze video to check MPT or safety inspections



Sustaining a Skilled Workforce

- Bi-monthly Construction Newsletter
- Engineering ONE Conference
- Construction Townhalls
- NICET Certification Support
- Summer Intern Program
- Field Staff WFD



NICET Training Website



Asphalt Paving Video





- Hands On Training
- Bridge Patching Video
- Field Visits For Field Staff– Somerset Lab/Materials Plants/Producers



Began piloting earlier this year

Using on an Overhead Bridge Replacement

Using these to review manual calculations

Working with KCI



CDS is proprietary and maintained in house

Is not integratable

Our field systems staff have been evaluating whether to enhance existing or go “off the shelf”

Recommendation by end of the year.

CDOne Field Office - Project A-037507001 | Contract A-037507001-3-02 - [Change Order Justification]

File Edit View Project Tools Window Help

Change Auth Change Orders Change Order Justification

Change Order Number: 1

Change Type: ALL

Change Type	Δ	Name	Description	Incomplete/Blank Answers
A	A-1	Normal Quantity Adjustment		
A	A-2	Normal Quantity Adjustment - Below 25% (CA216)		
A	A-3	Normal Quantity Adjustment - Above 25% (CA217)		
A	A-4	Normal Quantity Adjustment - Elevated Items (CA218)		
B	B-1	CTRL-01402 Item 11 Sidegrade Restoration (CA199)		
B	B-2	CTRL-01473 Item 4 Rock Additional (CA200)		
B	B-3	CTRL-01503 Item 4 Rock Additional (CA200)		

Cat	Change Type	Item No.	Fund	Previous Ratio	Previous Ratio	Previous Ratio	Description	Price	Unit	Plan Qty	CO Qty	Current Qty	Just Qty	Remaining Just Qty
1	A	0313-0626	10				SUPERFINE ASPHALT MIXTURE DESIGN, BASE COURSE, PG 640-22, 10" TO	\$55.40	SY	340.00	1.23	347.23	1.23	0.00
1	A	0410-1635	10				SUPERFINE ASPHALT MIXTURE DESIGN, WEARING COURSE (LEVELING, P	\$187.00	TON	12.00	-12.00	0.00	-12.00	0.00
1	A	0460-0001	10				ASPHALT TACK COAT	\$0.40	SY	2,512.00	2.29	2,514.29	2.29	0.00
1	A	0803-0001	10				PLACING STOCKPILED TOPSOIL	\$0.01	CY	126,576.00	-73,245.84	53,330.16	-73,245.84	0.00
1	A	0804-0002	10				TEMPORARY EROSION PIPE	\$4,459.00	BACH	16.00	-16.00	0.00	-16.00	0.00
1	A	0805-0003	10				PERFORATED WATER FILTER BAG	\$1,887.50	BACH	24.00	39.00	39.00	39.00	0.00
1	A	0806-0002	10				INLET FILTER BAG FOR TYPE C INLET	\$257.50	BACH	5.00	-5.00	0.00	-5.00	0.00
1	A	0807-0010	10				COMPOST FILTER SOCK, 18" DIAMETER	\$7.10	LF	26,781.00	-340.00	26,753.00	-340.00	0.00
1	A	0807-0012	10				COMPOST FILTER SOCK, 32" DIAMETER	\$12.60	LF	6,139.00	-430.00	14,387.12	-430.00	0.00
1	A	2005-1430	10				PREDRILLING FOR UNIFORM OBSTRUCTIONS, OBSTRUCTION DRILLIN	\$1.00	PSA	46,650.00	-46,650.00	0.00	-46,650.00	0.00
1	A	2005-1440	10				PILE EXTRACTION AND REDRILLING	\$1.00	PSA	45,000.00	-45,000.00	0.00	-45,000.00	0.00
1	A	2005-1450	10				MOBILIZATION FOR PREDRILLING OF UNIFORM OBSTRUCTIONS	\$1.00	PSA	15,000.00	-15,000.00	0.00	-15,000.00	0.00
1	A	2204-0001	10				CLASS 2 EXCAVATION	\$21.00	CY	36,476.00	1,693.33	26,328.33	1,693.33	0.00
1	A	2205-0276	10				SELECTED BORROW EXCAVATION ROCK, TYPE B	\$0.01	CY	60,000.00	-60,000.00	0.00	-60,000.00	0.00
1	A	2350-0106	10				SUBBASE 6" DEPTH (NO. 24)	\$10.90	SY	412,663.00	3,862.89	410,134.89	3,862.89	0.00
1	A	2350-0108	10				SUBBASE 8" DEPTH (NO. 24)	\$18.10	SY	2,823.00	74.00	2,897.00	74.00	0.00
1	A	2413-2095	10				SUPERFINE ASPHALT MIXTURE DESIGN, WEARING COURSE (LEVELING, P	\$124.70	TON	20.00	-20.00	0.00	-20.00	0.00
1	A	2414-0003	10				SUPERFINE ASPHALT MIXTURE DESIGN, ENDUR COURSE, PG 640-22, 10"	\$28.72	SY	340.00	1.23	347.23	1.23	0.00
1	C	2419-1000	10				STONE MASTIC ASPHALT MIXTURE DESIGN, WEARING COURSE, PG 640-2	\$17.00	SY	337,607.00	-4,377.76	328,540.36	-4,377.76	0.00
1	C	2491-0004	10				MILLING OF ASPHALT PAVEMENT SURFACE, 2" DEPTH	\$2.25	SY	84,940.00	-4,377.76	78,962.24	-4,377.76	0.00
1	A	2601-0402	10				24" THERMOPLASTIC PIPE, GROUP H, 15'-2" FILL	\$176.32	LF	1,231.00	17.64	1,268.64	17.64	0.00
1	A	2601-0600	10				18" THERMOPLASTIC PIPE, GROUP H, WATER TIGHT JOINT, 15'-2" FILL	\$147.84	LF	2,507.00	3.40	2,510.40	3.40	0.00
1	A	2601-0607	10				42" THERMOPLASTIC PIPE, GROUP H, WATER TIGHT JOINT, 15'-2" FILL	\$388.80	LF	522.00	-21.00	501.00	-21.00	0.00
1	A	2601-0999	10				TEMPORARY LEVEEING PRECONCRECTION	\$297.84	BACH	70.00	-22.00	48.00	-22.00	0.00
1	A	2604-0400	10				18" PERFORATED THERMOPLASTIC PIPE, GROUP H, 15'-2" FILL	\$110.63	LF	6,045.00	-277.04	5,767.96	-277.04	0.00
1	A	2605-0016	10				TYPE M PALET, STANDARD BOX, HEIGHT <= 10', CONDITION 2AB	\$6,976.01	BACH	30.00	1.00	31.00	1.00	0.00
1	A	2605-0113	10				TYPE M PALET, TYPE 4 BOX, HEIGHT <= 10', CONDITION 2AB	\$6,838.03	BACH	23.00	-1.00	22.00	-1.00	0.00
1	A	2616-1202	10				CONCRETE END SECTIONS FOR 18" PIPE	\$1,625.90	BACH	7.00	-1.00	6.00	-1.00	0.00
1	A	2616-9030	10				PLUG ENDING PIPE	\$423.94	BACH	29.00	-2.00	27.00	-2.00	0.00
1	A	2622-0002	10				REINFORCING AND STONE CONCRETE GLASS SCREEN	\$6.35	LF	289.60	211.60	460.00	211.60	0.00
1	A	2622-0001	10				PRECAST PIER TRANSITION	\$6,475.00	BACH	6.00	-2.00	4.00	-2.00	0.00
1	A	2623-0001	10				SINGLEFACE CONCRETE BARRIER, 41"	\$74.15	LF	706.00	-10.00	696.00	-10.00	0.00
1	A	2623-0002	10				SINGLEFACE CONCRETE BARRIER, 52"	\$98.00	LF	7,823.00	-181.00	7,744.00	-181.00	0.00
1	A	2696-0200	10				REPAIR OF TEMPORARY IMPACT ATTENUATING DEVICE	\$1.00	PSA	1,500.00	0.00	-1,500.00	0.00	0.00

Expand All Collapse All

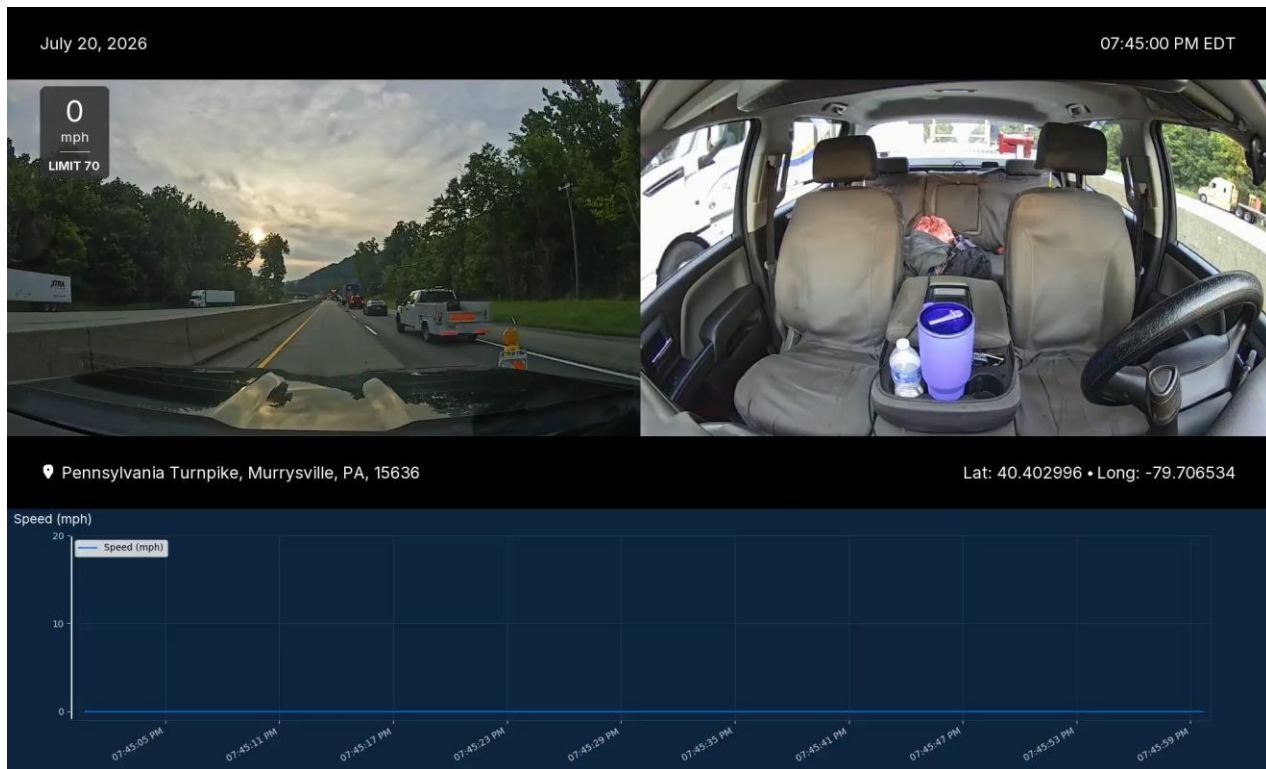
Total Items on Change Order: 65

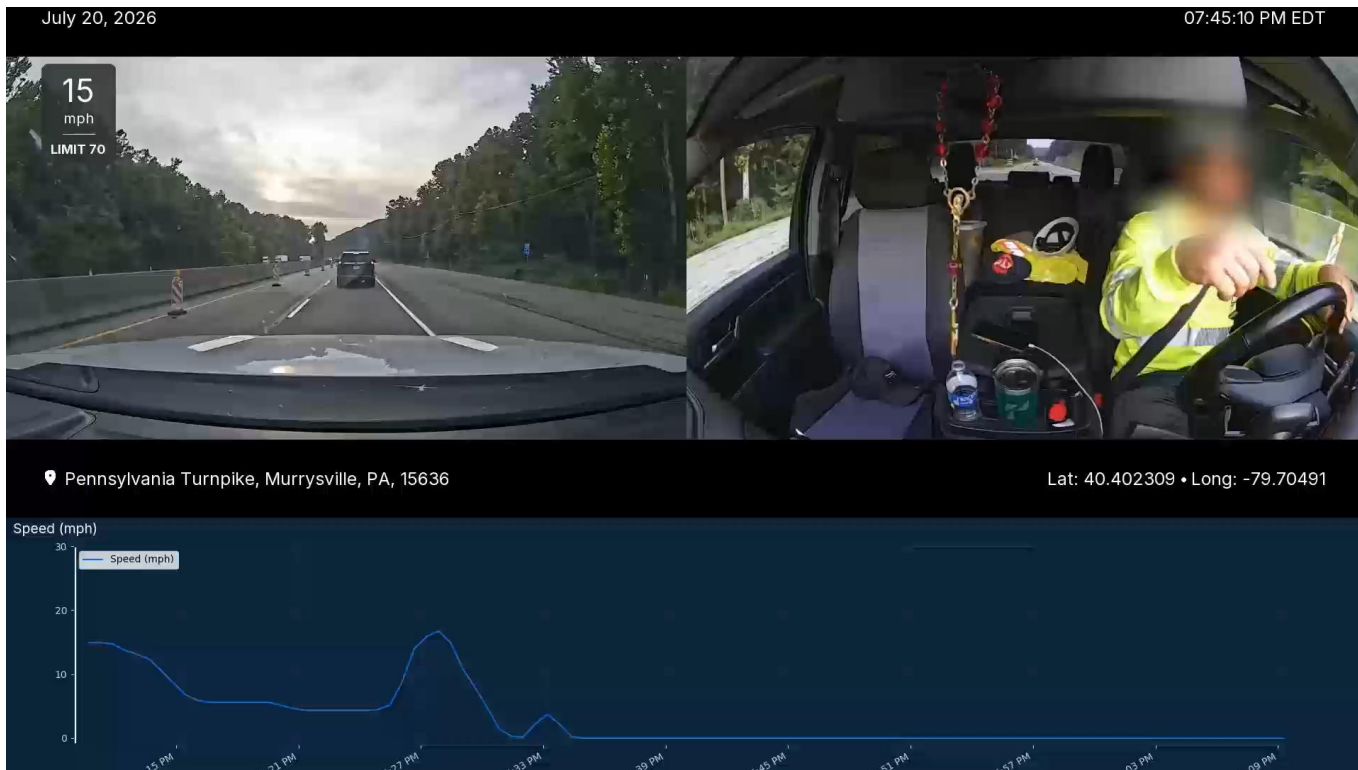
Items requiring Justification: 65

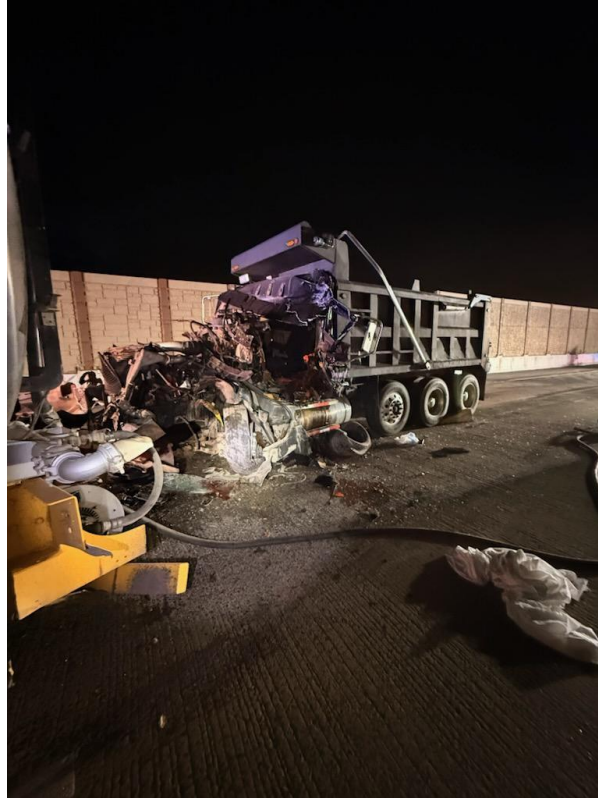
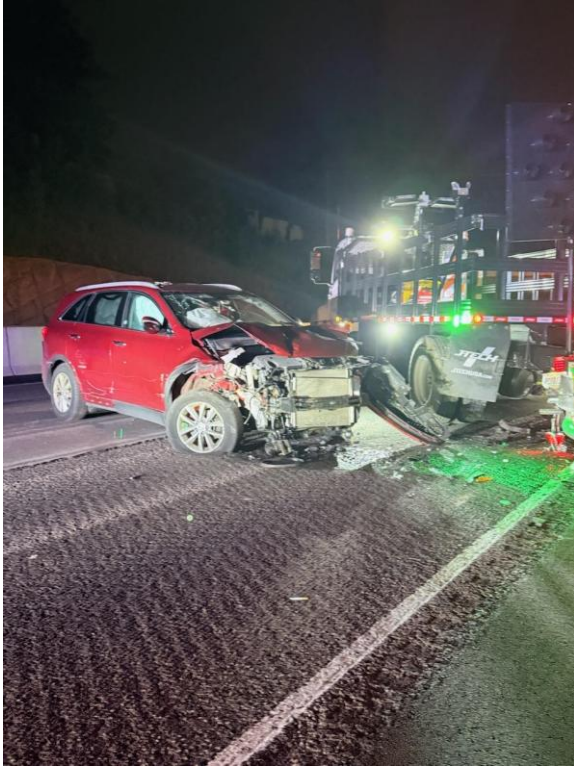
Close

Use TABKEY

Rate P/C Executive











FINALLY,
THE END



Questions?

